Designing an API for reading/writing new data

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22 May 2013

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This work performed under the auspices of the U.S. Department of Energy by Lawrence Livermore National Laboratory under Contract DE-AC52-07NA27344.

LLNL-PRES-636952

Goal for the low-level API and implementation

- Design an open source fast, low-level API with implementation to
  - Read new structure
  - Write new structure?
  - Processing for some data?
    - e.g., for Monte Carlo transport
      - Conversion on Legendre data to pointwise data
      - CDF calculated from PDF
        - » NJOY calculates CDF and put it and PDF in the ACE file
- Provide an implementation for all to use

Proposed Gantt chart

	2013 Nov	2014 May	Nov	2015 May	Nov
Low-level data containers	Review ENDF, EXFOR, GND, for proposed path	First draft documenting structure	Release structure documentation		
Reaction data hierarchy	Review ENDF, EXFOR, GND, …	First draft documenting structure	Second draft documenting structure	Release structure documentation	Release of ENDF, JEFF, JENDL, …
Particle data hierarchy	Review POP, ENSDF, RIPL, masses, …	First draft documenting structure	Second draft documenting structure	Release structure documentation	Release of particle database
Low-level API		Review GIDI and other APIs	First draft of API	Second draft including implementation	Release in C, C++ and/or Java
	Phase 1	**Phase 2**	**Phase 3**	**Phase 4**	**Phase 5**

Phase 1

- LLNL is currently working on a low-level API with implementation for GND
  - Called GIDI (General Interaction Data Interface)
  - GND and GIDI will freeze when new structure are finalized
- Are there other APIs we should look at?
  - e.g, LANL's NDI
  - How about openMP or others?
- Need a list of users
  - What are they currently doing?
  - What would they like?

Phase 2

- Review GIDI and other APIs

- Report findings and recommendations at May 2014 meeting

Phase 3-5: follow Gantt chart

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Potential issues

- Can LLNL/LANL/BNL/ORNL release all of its codes?
  - What about other institutions?
- What languages and compilers/versions
  - E.g., C, C++, Fortran, Java
  - API must specify for each language
- It is important that the Low-level data containers, reaction data hierarchy and particle data hierarchy stay on time.

Potential issues 2

- Need to find users of API implementation and get their feedback
- Where should the repository be located?
  - We should only need one implementation, unlike infrastructure
- Probably should have low-level functions that are shared with infrastructure (uniformity and speed).
- Do we need a computer expert?

Volunteers?

- Do I have any volunteers?
  - I would like at least one from Asia, Europe and Americas
- We need to set up a Wiki – for all

Caveat Emptor: This is an aggressive schedule